

ABSTRACT

Sensors for determining the presence and concentration of bio-molecules in a biological sample are provided in the form of polymer brushes, which comprise a substrate having a surface modified with a hydrophobic

- 5 polymer segment, attached to which is a water-dispersible or water-soluble polymer segment having functional groups that bind probes. The method of synthesis of such sensors preferably includes use of controlled free radical polymerization techniques, which allows for controlled architecture polymers to modify the surface of the substrate, and the use of monomers possessing
- 10 functional groups which do not require activation prior to probe attachment. In this manner functional groups in the polymer chain are removed from the surface, which allows for solution chemistry to be more realistically reproduced with the benefits of a solid bound probe.